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ABSTRACT

Teaching is seen as an integrated and integrative act and the need in teacher education to promote the prospective teacher's ability to synthesize elements of the instructional program into coherent patterns is stressed. The justification for synthesis is presented in four characteristics suggesting essentials of a teacher education program (an identifiable set of generalizable skills forming a critical objective of the program, a common set of attitudes that characterize the teacher role, common professional expectations of the teacher, and a basic teaching certificate for the graduate) and in curriculum commonalities (foundation studies, curriculum studies, study of pedagogy, and practice teaching experiences). Illustrative cases are presented to show how these syntheses are translated into program actualities through (1) staff development, (2) program articulation, (3) program organization, (4) program implementation, and (5) program evaluation. (MJB)

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FROM ANALYSIS TO SYNTHESIS IN TEACHER EDUCATION

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Extensive and intensive emphasis on CBTE (Competency Based Teacher Education) programs has contributed significantly to the systematic analysis of the teaching act. For in determining competencies, mastery of which usually forms the objective of learning modules in these programs, the teaching act has had to be carefully observed. Literature search and examination of teaching models have been equally productive sources for identifying competencies.

Other types of analyses with yet unexplored potential for generating teacher education program models are the analysis of concept teaching, classroom interaction analysis, analysis of models of teaching and role analysis. These have not yet had the fruitful explorations enjoyed by analysis of teaching competencies. Perhaps by now we have begun to note the centrality of the notion of analysis. It is indeed a necessary stage in the conceptualising process, leading to categories of information that then need to be synthesised into some kind of pattern for the information to be most useful. It is our contention that since the ability to synthesize and make patterns is so central to creating and using knowledge well, then in teacher education we need to move beyond analyses to the stage of synthesis.

That it is timely to pursue such a direction is supported by the critics as well as the apologists of CBTE programs who agree that providing unity among program elements and modules is often the single greatest challenge faced by program innovators.[1] It is our observation that students moving through most teacher education programs perceive initially a large disarray of activities, some of which they see as "busy work" quite unnecessary to the making of a teacher. As the program

progresses, some students begin to see some internal structure, then cohesion and finally some unity to the program. "Things begin to make sense" to them. Unfortunately, there are many who successfully complete the program without ever seeing any integration, any unity. They leave us feeling that they have just passed through some hoops in order to get that piece of paper. Some, although good at performing such specific skills as planning a lesson, constructing specific learning objectives, asking "good" questions, never quite see where curriculum subjects (considering the school curriculum as well as the teacher education curriculum) meet and interplay. For them things remain compartmentalized.

In teacher education programs can we increase the importance placed on helping students to develop their own abilities to synthesize and make patterns out of their experiences? To recognize points of integration in teaching? To understand the unifying nature of their role and job? To select those pervasive concepts that will lead teacher and student to uncover unifying elements within realms of knowledge?

In this presentation, we hope to offer a rationale for this needed synthesis given the integrative nature of teaching which is the teacher's business and of knowledge, the teacher's subject matter; also by way of some illustrations, to suggest that such can be done in our teacher education programs.

The Nature of Teaching

"I teach kids" says the elementary teacher. But "I teach Geography" (could just as well be History or Mathematics), says the secondary teacher. How often do we hear such statements!

I suggest that each of those teachers has an inadequate understanding of teaching; for to teach is to teach someone something, whatever the model of teaching that is used in planning for and developing classroom interactions. Scheffler reminds us of "teaching...as an activity aimed at the achievement of learning"[2] thereby underscoring the intentional nature of the activity. This is not the place to discourse whether or not learning does occur as a result of teaching. But given such a definition which unmistakably implies the existence of the learner, the contingent proposition is that something is intended to be learned. Hirst contends that although such teacher statements might be useful slogans, they must be rejected on the basis of simple, logical truth for "one necessarily teaches somebody something".[3] Two criteria necessary to understanding the nature of this enterprise are these:

1. The specific nature of the teaching activity must express what is to be learned so that the learner knows the teacher's intentions. Activities such as questioning, showing, telling, are good indicators of intent to the student so they are central to the teaching episode.

2. Since a specific teaching activity is directed towards a particular student or group of students, it follows that the knowledge must be so expressed that the particular student or student group understands it; hence the need for the teacher to have psychological and other knowledge about the learner. For the teacher, it means establishing sets of relationships between the learner and that to be learned. This goes beyond matching, often seen as a single-dimension process, to making

sense of a clutter of information about the learner and knowledge and therefrom creating kinds of patterns or relationships that will enhance learning. This is an aspect to recognizing unity in teaching and underscores the integrative nature of that enterprise.

The Nature of Knowledge

Transmitting knowledge, however this is done, is still seen as one of the primary functions of the school. More palatable forms of that function today appear in the literature and professional discourse as creating knowledge, making meaning, ways of knowing. However stated, knowledge remains the essential ingredient of the teaching-learning process, hence teachers' legitimate concern with the nature of knowledge. In fact such concern ought to occupy a central place in teacher education curriculum.

Is knowledge monolithic or is it differentiated into a number of forms? Some epistemologists, among them Paul Hirst[4] and R. S. Peters[5] contend that knowledge is indeed divided into a limited number of forms based on the three elements of concept, logical structure and truth criteria. This gives rise to "disciplines" or "subjects" that should correctly be part of the school curriculum. Although Phenix's knowledge domains differ somewhat from Hirst's, they agree that, despite the distinctive feature of domains of knowledge, the "principle of the unity and interrelatedness of meanings in the education of the whole person"[6] argues for some study of all of the areas of knowledge. Hirst suggests that there are seven of these domains: Mathematics, Physical Sciences, Inter-personal experience and

knowledge, Aesthetics, Morals, Religion, and Philosophy. Phenix talks of six domains: Symbolics, Empirics, Aesthetics, Synnoetics, Ethics/Morals and Synoptics.

Recognizing these forms of knowledge may engender a denial of those who see knowledge as one monolithic whole; but it does not deny that unity exists within and among the various forms. Such unity exists in terms of sets of concepts and similarity of structure of particular domains; for example, similarity of concepts and logical structure may be noted in the knowledge domains of Religion and Philosophy. Yet there is enough that is particular to each domain to warrant each being constituted as a distinct category of knowledge.

It is the teacher's task to know the conceptual schemes within domains well enough to help students grasp the inter-form relation. This calls for the ability to synthesize as well as analyse.

On the other hand, Ryle sees knowledge as basically divided into two domains: "knowing that" and "knowing how", a categorization which Hirst recognizes but cannot support wholly. Whereas "knowing that" deals with propositional thought, and therefore cognitive understanding, "knowing how" is concerned with operations and procedural knowledge, i.e. the "capacities... to find out truths...and the ability to organize and exploit them, when discovered."[7] Although these two domains of knowledge are quite different from each other, they are intricately interrelated. Whereas "knowing how" may always involve mastery of "knowing that", it picks out certain capacities beyond cognitive understanding of which a person is capable. The temptation for

students in a teacher education program is to focus on procedural knowledge. The aim of our programs ought to be to get students, through reflection in addition to rule teaching, to see the constant movement between "knowing that" and "knowing how". The tendency is to believe that "knowing how" follows the 'regulative propositions' of "knowing that" ~~and~~ which dictate the particular performance. This is expressed in the popular maxim "Think before you act." However it is not always so. Often efficient practice precedes the conceptualization of it; so it becomes possible for all kinds of intelligent operations to occur before a consideration of the principles that logic suggests should precede in order to ensure intelligent performance. Such activity patterns are common in classrooms and provide ample evidence of a reciprocal rather than the always expected tandem relationship of "knowing that" and "knowing how" knowledge. Here we can also see that knowledge, when reduced from several to two distinct categories manifests some element of unity.

An implication of the discussion of the nature of knowledge thus far is that the teacher should be prepared to teach knowledge so as to show its separateness (uniqueness of a domain) as well as its unity.

The Nature of Synthesis

In order to teach for the comprehension of unity, the teacher needs to develop his own capacities for deriving synthesis. This means, first uncovering the interdependence of concepts, propositions, operations and then leading the student to do the same. It is the task of the teacher to help the student in developing concepts general enough to establish connect-

ions between varied experiences. It has been said earlier that analytic (and evaluative) work is necessary for the development of such synthesis, for the quality of the whole depends on that of its parts.

"Teaching the whole child" is a common statement that summarizes the philosophy of many of our teachers. This is how they express their concern for the development of the total human person. But how to help that person acquire the capacity for perceiving total structure in knowledge and in his experiences cannot be expressed as easily. In his taxonomy of educational objectives, Bloom and his associates[8] have illustrated the complexity of this capacity. They place synthesis, defined as the capacity to produce wholes from parts, towards the highest stage of the taxonomy. Perhaps it should be the highest stage, for evaluation is as necessary as analysis to detecting inter-relationships.

Up to this point in our discourse we have been saying that the integrative nature of teaching and the unifying nature of knowledge offer a strong enough rationale for providing in teacher education programs an increasing emphasis on developing the capacity for synthesis. An examination of the wholistic nature of the human being, which we have left unexplored in this paper, would give further support to our proposition.

The Nature of Teacher Education

The specialization area of teacher education itself provides us with additional evidence for synthesis. We note that, regardless of what conventions operate in organizing a teacher preparation program, some essentials remain similar: an

identifiable set of generalizable skills, the communication and development of which form a critical objective of the program; a common set of job attitudes that characterize the teacher role; common professional expectations of the teacher and a basic teaching certificate for the graduate. Commonality in the curriculum is also noted in the presence of these four elements: foundation studies, curriculum studies, study of pedagogy and the practice teaching experience.

The central question now is, How do we use these evidences of synthesis to plan a teacher education program that will help the student teacher to synthesize the complexities of teaching?

Manifestations of Synthesis

Keeping in mind that the stages through which we move in program development remain similar whatever the philosophical base, we will try to show, by references to specific teacher education programs how synthesis may be arrived at.

1. Staff development. At this stage the staff examines its own understanding of the nature of teaching and the nature of knowledge in order to arrive at a commonly shared philosophy that will undergird the program being developed. In this process the staff members are examining, individually and collectively, their own capacities for analysing and synthesizing information.
2. Program articulation. By describing program philosophy, goals, elements and resources in open forum, the staff clarifies their perspectives on teacher education and is experiencing the processes in which it is hoped the students themselves will engage in order to further understanding and

intelligent practice. Deciding what goals and what learning experiences to include and/or discard is done considering the concepts of unity and integration that ought to be built into the program.

3. Program organization. The student must be introduced to the program in parts and these parts must be placed so as to show their inter-relatedness. In addition to the common elements of a teacher education program mentioned earlier, other factors such as timetabling, use of resources, staff availability to students are organizing elements that help to convey the message of interdependency. Linearity in placing program components gives place to interaction.

4. Program Implementation. The points of interface between staff, students and resources are critical to the development of synthesis. For it is in these encounters that the student articulates his perceptions of the synthesizing process. We find that it is at these points, deliberately planned, that the student brings together his experiences in the many parts of the program, and in dialogue with peers and guides (college faculty, supervising teachers), uncovers a total structure to the program.

5. Evaluation. From individual interviews with students we have learned that the more effective the interface, the greater the likelihood that the student will recognize the interrelatedness built into his teacher training program and that when this begins to happen, he takes this perspective into his classroom teaching.

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6. Philip H. Phenix, Realms of Meaning, New York^ McGraw-Hill, 1964.
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8. Benjamin S. Bloom, et al. Taxonomy of Educational Objectives, Handbook 1: Cognitive Domain, New York: David McKay Co., 1956.